Technical Modules

Community Resources

Background and Objectives

It is the goal of this module to identify the natural resources valued by communities within a watershed in order to gain a better understanding of which resources will require protection.

> ***"For communities to grow, they must protect the underlying natural systems on which they are built."***
>
> EPA (1997a)

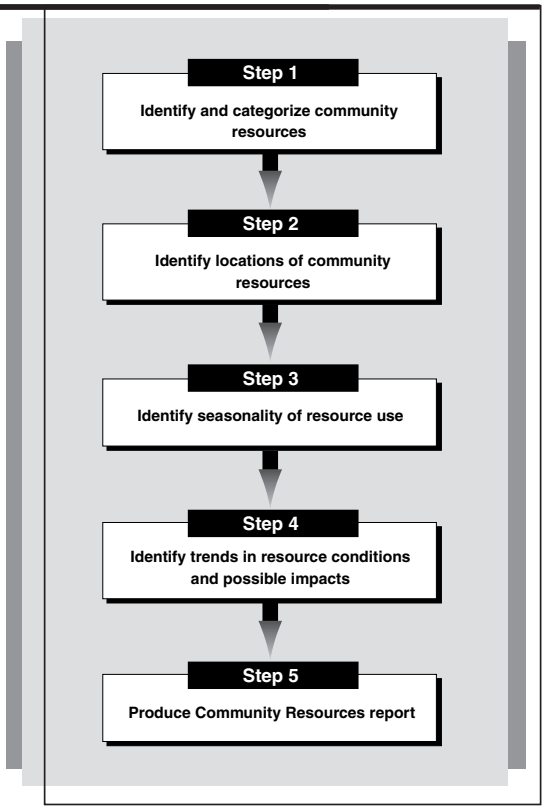
The Level 1 Community Resources assessment provides a structure for communities to identify and evaluate their valued natural resources in the watershed. The Level 2 assessment documents the importance of community resources, provides the rationale for protecting those resources, and supports the prioritization and implementation of management solutions.

Community Resources Module Reference Table

Critical Questions	Information Requirements	Level 1 Methods/Tools	Level 2 Methods/Tools
CR1: What resources in the watershed are significant to the community?	• Anecdotal information • Community survey	• Collect and summarize existing information	• Detailed interviews • Work with historian or anthropologist • Community use analysis • Economic analysis
CR2: Where are community resources located?	• Anecdotal information • Watershed base map • Natural resource maps	• Collect and summarize existing information	• Detailed interviews • Field work
CR3: What is the seasonality of the community resource use?	• Anecdotal information	• Collect and summarize existing information	• Community use analysis • Work with historian or anthropologist
CR4: What processes or land use activities may be impacting community resources?	• Anecdotal information • Land use maps	• Collect and summarize existing information	• Detailed interviews • Field work
CR5: How have community resource conditions changed through time?	• Anecdotal information	• Collect and summarize existing information	• Detailed interviews • Field work • Community use analysis

Level 1 Assessment

Step Chart



Data Requirements

- Watershed base map
- USGS topographic maps
- Land use map

Products

- Form CR1. Categorization of community resources
- Form CR2. Trends in community resource conditions
- Map CR1. Community resources
- Community Resources report

Procedure

The primary objectives of the Community Resources assessment are as follows:

- To identify valued community resources.
- To identify locations of community resources.
- To evaluate changes in resource conditions through time.

Step 1. Identify and categorize community resources

Through interviews with community members, identify resources that have significance or value to the community. Many of the important community resources will have been identified during Scoping. Resources could include such things as wildlife, fish, drinking water, or a unique place that has a recreational or other unique value to the community. For example, many watersheds support fish populations that have long served to attract recreational fishermen or even commercial fisheries. Another example is a historical feature, such as a homestead from the early 1800s that documents history of pioneer life in the watershed. Lifelong residents may be especially helpful in identifying uses of

natural resources in the watershed. Once a list of resources is generated, categorize them by resource use (Box 1) and record the information in Form CR1 (Figure 1).

Box 1. Community resource categories

- **Natural beauty:** resources that possess aesthetic value (e.g., a scenic lookout, a waterfall, or a wetland)
- **Recreation:** places and resources used for entertainment
- **Historical:** sites that possess historical significance
- **Subsistence:** resources used to provide food
- **Economic:** resources important for community employment and revenue
- **Education:** places or resources of educational value

EPA (1997b)

Figure 1. Sample Form CR1. Categorization of community resources

Resource	Site	Natural Beauty	Recreation	Historical	Subsistence	Economic	Education	Other
Rocky Ford	1	●	●					
Strawberries	2				●			
Catfish	3		●		●			
Off road vehicle trails	4		●					
Copper	5					●		
Beaver	6					●		
Elk	7		●		●			
Mushrooms	8		●		●	●		
Patton Homestead	9			●			●	
Gem Lake	10	●	●					

Step 2. Identify locations of community resources

Determining the location of community resources within the watershed is a critical step in evaluating possible land management impacts to these resources (Box 2). Exact locations of resources need not be identified if the goal is to preserve sensitive information; however, it is important that all resource locations be identified in some way. Identifying the presence of sensitive resources in a broad area or with coded symbols can maintain the security of important sites should the community wish to not widely advertise their existence or location.

Box 2. Sources of information on community resource locations

Local Town Hall, County Office, or Planning Board

- Local land use maps that show whether land is used for housing, commercial enterprises, agriculture, or open space
- Tax maps that show public or private ownership of land
- Flood insurance maps

State Environmental Agency

- Wetland delineation maps
- Watershed maps that show the waterbodies, wetlands, and other components of the watershed
- Land use maps
- Aerial photos
- Aquifer delineation maps

State Conservation or Land Acquisition Group

- Land use maps

State Wildlife and Fisheries Department or Department of Natural Resources

- Maps of state and local recreation areas
- Maps showing the distribution of different plants and animals throughout the state, including rare and endangered species, non-native species, and critical habitat

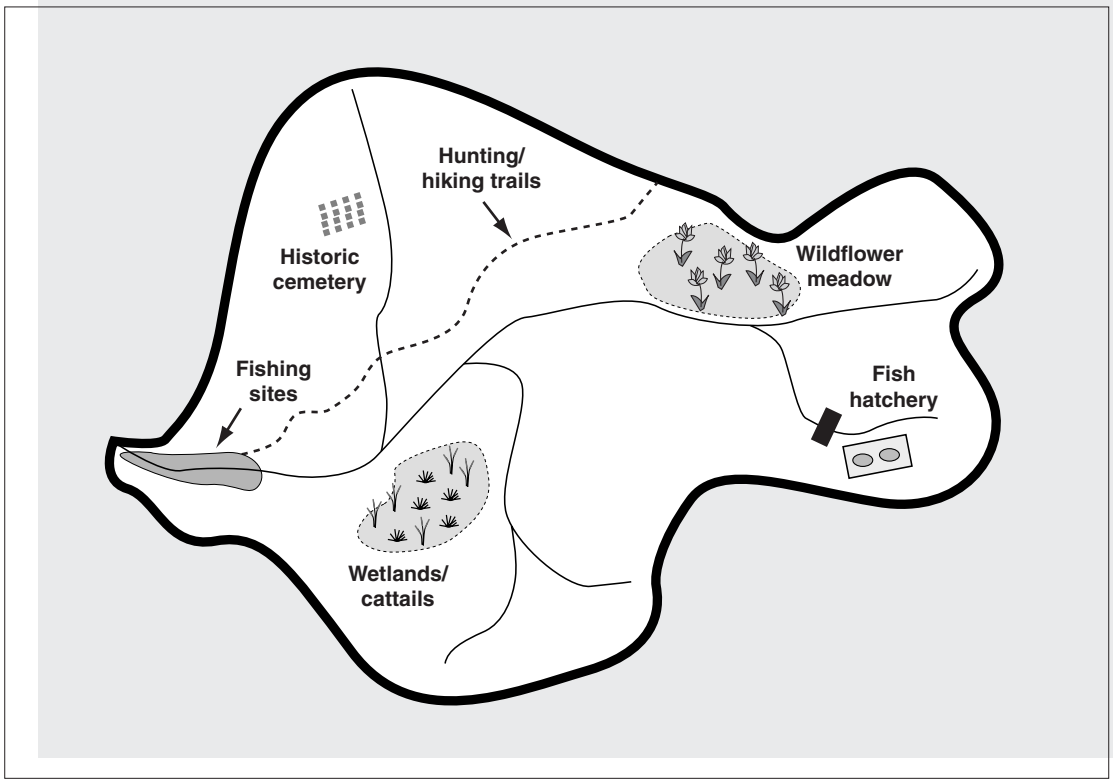
Federal Government

- Maps showing natural features of all parts of the United States (USGS)
- Maps of coastlines and ocean waters (The National Oceanic and Atmospheric Administration [NOAA])
- Maps of floodways and flood hazard areas (FEMA)

EPA (1997a)

To create Map CR1, add the locations of community resources to a base map of the watershed (Figure 2). Topographic maps that cover the watershed area can also be used. The community resources map can be a rough schematic or a more detailed map using GIS technology.

Figure 2. Sample Map CR1. Community resources



Step 3. Identify seasonality of resource use

Natural resources important to a community are often available only at specific times of the year (Box 3). For example, berries are gathered during the summer, and deer and elk are hunted during the fall. Understanding the seasonality of resource use provides a greater opportunity to connect land use impacts to community resource conditions.

Step 4. Identify trends in resource conditions and possible impacts

An important and easily available source of information on community resource condition trends is interviews with individuals who have lived in the community for many years. Information on conditions or trends, such as bad smelling drinking water or an obvious decrease in fish populations, can be obtained from long-term residents or from historical documents on community life. Another important source of information is state or federal restrictions on using community resources. Examples include restrictions on fish or water consumption, the federal listing of an endangered wildlife species, or the classification of a parcel of land as critical habitat.

Use the information collected to identify trends in resource conditions and summarize the trends in Form CR2 (Figure 3).

For each resource, also identify land use impacts on resource conditions. While many of the potential land use impacts will have been identified during the Scoping process, further investigation can help to refine the connection between land uses and resource conditions. The sources of resource impairment should also be recorded in Form CR2.

Box 3. Seasonality of resource use, an example from the Sol Duc watershed

Quileute Annual Cycle (approx. dates)	Sol Duc Watershed Activities
January	• Hunting small mammals: land otter and beaver • Steelhead fishing • Root digging: ferns
March	• Skunk cabbage
April	• Camas • Salmonberry and thimbleberry • Horsetail sprouts
May	• Bird hunting • Cedarbark • Spring (chinook) salmon • Blueback (sockeye) salmon
June	• Labrador tea and herbs

Shaffer et al. (1995)

Figure 3. Sample Form CR2. Trends in community resource conditions

Resource	Trend	Sources of Impairment	Related Modules
Native Vegetation	• Decrease in native plant species in local park	• Increased recreational use	• Vegetation
Wetlands	• Decrease in acreage • Loss of plant diversity	• Road construction • Agriculture • Peat harvesting	• Vegetation • Erosion
Trout	• Decreased populations • Loss of adequate habitat	• Urban development • Grazing contributing sediment to prime spawning habitat	• Channel • Vegetation • Hydrology • Water Quality • Aquatic Life

Step 5. Produce Community Resources report

The Community Resources report should summarize the location and use of important community resources and discuss possible impacts to and trends in resource conditions. Elements of this report include the following:

1. Description of Community Resources
    - Community cultural story (Box 4)
    - General location and use of community resources
    - Changes in resource use and conditions over time

2. Summary of Results
    - Conclusions
    - Map CR1. Community resources
    - Form CR1. Categorization of community resources
    - Form CR2. Trends in community resource conditions

3. Sources of Information
    - Methods
    - References
    - Assumptions
    - Confidence in the assessment
    - Further information needs

Box 4. Deer Creek cultural story

The Stillaguamish River watershed lies 40 miles north of the Seattle area in Washington State and is approximately 1,200 square miles. The Stillaguamish flows off the western foothills of the Cascade Mountains down to Puget Sound. The river and its tributaries support four salmon species, steelhead trout (sea-run rainbow trout), sea-run and resident cutthroat trout, and many other species of fish. These fish were once plentiful but have suffered from degradation of their habitat and over-harvest during the past century. The estuary of the Stillaguamish also supported abundant fish and shellfish populations.

The watershed is the historic home of the Stillaguamish Tribe of Native Americans. The tribe depended on the abundant fish resources in the watershed for their food and for trade. Salmon were harvested almost year round and were eaten fresh, cooked over alder campfires, and dried. Their roe (eggs) were considered a delicacy and a good source of oil and protein. The Stillaguamish culture honored the salmon and steelhead, which provided a central focus for their myths, legends, and religion.

Europeans began to settle the area in the late 1800s; however, they tended to settle in the lowlands near Puget Sound. They also found food, sustenance, and sport in the salmon and steelhead of the watersheds.

In 1911, a world famous author and sportsman, Zane Grey, journeyed to the Pacific Northwest to fish for steelhead in a famous tributary stream of the Stillaguamish River, Deer Creek. He later wrote of traveling all day by train into the forests north of Seattle until he finally reached the town of Oso at the mouth of Deer Creek. He then climbed aboard a logging train and headed into the Deer Creek watershed. Arriving finally, and climbing over moss covered downed trees, he described Deer Creek as the most crystal clear, emerald green trout stream he had ever seen.

Today, Deer Creek runs chocolate brown year round. Steelhead fishing has been closed for decades, and the Deer Creek steelhead are perhaps extinct. The salmon and steelhead runs of the Stillaguamish River are now some of the weakest in the region, and most years no fishing by sportsmen or tribal fishermen is permitted.

Level 2 Assessment

The purpose of the Level 2 Community Resources assessment is to collect additional information on the importance of the resources identified in the Level 1 assessment. Resources in the watershed might have social, cultural, or recreational significance, or they might support the economy or quality of life in the community. Documenting the importance of community resources will provide the rationale for protecting those resources and will support prioritization and implementation of management solutions. A useful source of information on evaluating the benefits provided by community resources is *Community-Based Environmental Protection: A Resource Book for Protecting Ecosystems and Communities* (EPA 1997a).

Social and Cultural Importance of Community Resources

Describing the social and cultural significance of watershed resources will help the community to better document their cultural heritage, understand their relationship to the natural environment, and communicate with others about preserving valued resources. The following methods can be used to collect information on the cultural significance of community resources:

- Perform personal interviews with natives, long-term residents, and other community members.
- Perform fieldwork to locate community resources.
- Work with a historian, anthropologist, or archaeologist familiar with the region.

Topics that could be addressed include the following:

- Describe traditional uses of resources, such as plants, fish, and wildlife for food or waterways for transportation. In addition to existing resources, consider resources that have been degraded or lost.
- Provide additional detail on the cultural or historical significance of locations in the watershed.

Economic Importance of Community Resources

Another way to establish the importance of community resources is to identify, and if possible to quantify, their contribution to the local economy. The economic value of community resources is most obvious when the community's economy is based on agriculture or on the extraction of natural resources, such as fish, shellfish, trees, coal, and oil. Other ways that natural resources can contribute to a community's economy include the following:

- Natural areas can be important for recreation-based businesses that attract tourists, anglers, hunters, birdwatchers, and hikers.

- Lakes, parks, and preserves can enhance property values.

- Wetlands, forested areas, and floodplains can provide natural flood water storage and water filtration, reducing the need for capital projects to replace these functions, such as levees and seawalls or water treatment plants.

Table 1 lists possible indicators and sources of information for documenting the economic value of community resources.

Importance of Community Resources for Quality of Life

Natural resources can also contribute to a community's quality of life, although this type of resource value is more difficult to quantify than economic value. Examples of benefits that can be provided by natural resources include the following:

- Natural beauty.
- Human health and safety.
- Recreation.
- Sense of community.
- Educational value.

Table 2 lists possible sources of information for documenting the importance of community resources for quality of life.

Table 1. Information sources for assessing the linkages between natural resources and the local economy

Overall Assessment Objective	Sample Indicators	Possible Sources of Information
Assess dependence of local tax revenues on ecosystems	• Annual revenue from fees for use of parks and beaches	• Local parks and recreation department, local revenue department
Assess dependence of local economy on nature-based recreation	• Annual revenues from and/or employment in local outdoor recreational businesses (e.g., boat rentals, nature tour guides, birdwatching, and cross-country skiing centers)	• Local merchants • Local chamber of commerce
	• Annual number of fishing or hunting licenses issued in the county	• State fish and wildlife department
	• Annual number of "activity days" for various categories of outdoor recreation (e.g., fishing, hunting)	• State Comprehensive Outdoor Recreation Plans (contact state tourism and recreation agency) • U.S. Fish and Wildlife Service (USFWS), *National Survey of Fishing, Hunting, and Wildlife Associated Recreation*, published every six years • Local chamber of commerce
Assess need for clean water for industrial use	• Use of water by food processors, breweries, etc.	• Local water authority • Local chamber of commerce • Local business leaders or representatives of relevant companies
Assess impact of ecosystem health on residential property values	• Relative cost of otherwise similar houses located near and several blocks away from a local park • Qualitative indicator based on home buyer and realtor opinions on premium paid for properties located near environmental amenities (e.g., clean rivers, parks)	• Local registry of deeds • Survey of recent home buyers in the area • Local realtors
Assess trends in commercial and residential development	• Urban Sprawl Index: rate of conversion of open land to suburban/urban development • Percentage of building permits in downtown/ urban core vs. non-urban or suburban areas	• Municipal/county/state land use planning offices • Local building and permits office
Assess local dependence on "extractive" natural resource-based activities	• Revenues of local forest products industry relative to revenue in all industries • Employment in local forest products industry relative to employment in all industries	• U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, phone: (301) 457-4100 • U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System*, phone: (202) 606-9900 • USFS, *Forest Statistics*, by state
	• Revenues of local commercial fishery relative to revenue in all industries • Employment in local commercial fishery relative to employment in all industries	• U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, phone: (301) 457-4100 • U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System*, phone: (202) 606-9900 • National Marine Fisheries Service (NMFS) in the U.S. Department of Commerce maintains county-level data on landings and value of catch • Local chamber of commerce
Assess sustainability of local resource-based industries	• Ratio of the amount, health, and diversity of timber regrowth to timber cut • Stability in numbers of juvenile and young-of-year in fish population over time	• USFS, *Forest Statistics*, by state • NMFS data (see above)

EPA (1997a)

Table 2. Information sources for assessing the linkages between natural resources and local quality of life

Overall Assessment Objective	Sample Indicators	Possible Sources of Information
Characterize importance of ecosystem to local education	• Number of school field trips to natural areas • Number of visitors to local arboretum, bird sanctuary, or state and national parks	• Local schoolteachers • Management office of relevant organization (e.g., arboretum)
Assess flood control services provided by local wetlands	• Qualitative indicator based on flooding history of area with wetlands and similar areas where wetlands have been lost to development	• Newspaper archives • Local land use officials • Local emergency management officials
Characterize dependence of town on local surface and groundwater	• Percentage of household water supply from local sources	• Local public works department • Regional water supply authority
Assess availability of land for recreation	• Acres of land/open space available for recreation per 1,000 people in the community	• Local land use officials • Local or state parks and recreation officials
Characterize level of recreational activity dependent upon ecosystems	• Annual number of "activity days" for various categories of outdoor recreation (e.g., rafting and kayaking, fishing, hunting, and visitor days to local resorts and campgrounds) • Trends in beach closures or fishing advisories • Fate and effects of sanitary waste and refuse on ecosystems	• USFWS, *National Survey of Fishing, Hunting, and Wildlife Associated Recreation*, published every six years • State Comprehensive Outdoor Recreation Plans, contact state tourism and recreation agency • County or municipal records for sanitary treatment and waste removal from recreation site

EPA (1997a)

References

Shaffer, J. A., B. Warner, and J. Powell. 1995. Sol Duc Pilot watershed analysis: Cultural module. Olympic National Forest, Olympia, Washington.

U.S. Environmental Protection Agency (EPA). 1997a. Community-based environmental protection: A resource book for protecting ecosystems and communities. EPA 230-B-96-003, Washington, D.C.

U.S. Environmental Protection Agency (EPA). 1997b. Cultural ecosystem stories: A guide to preparing natural resource case studies (DRAFT). EPA, American Indian Office, Washington, D.C.

Form CR1. Categorization of community resources

Resource	Site*	Natural Beauty	Recreation	Historical	Subsistence	Economic	Education	Other

** Identify locations on Map CR1. Community resources*

Form CR2. Trends in community resource conditions

Resource	Trend	Sources of Impairment	Related Modules